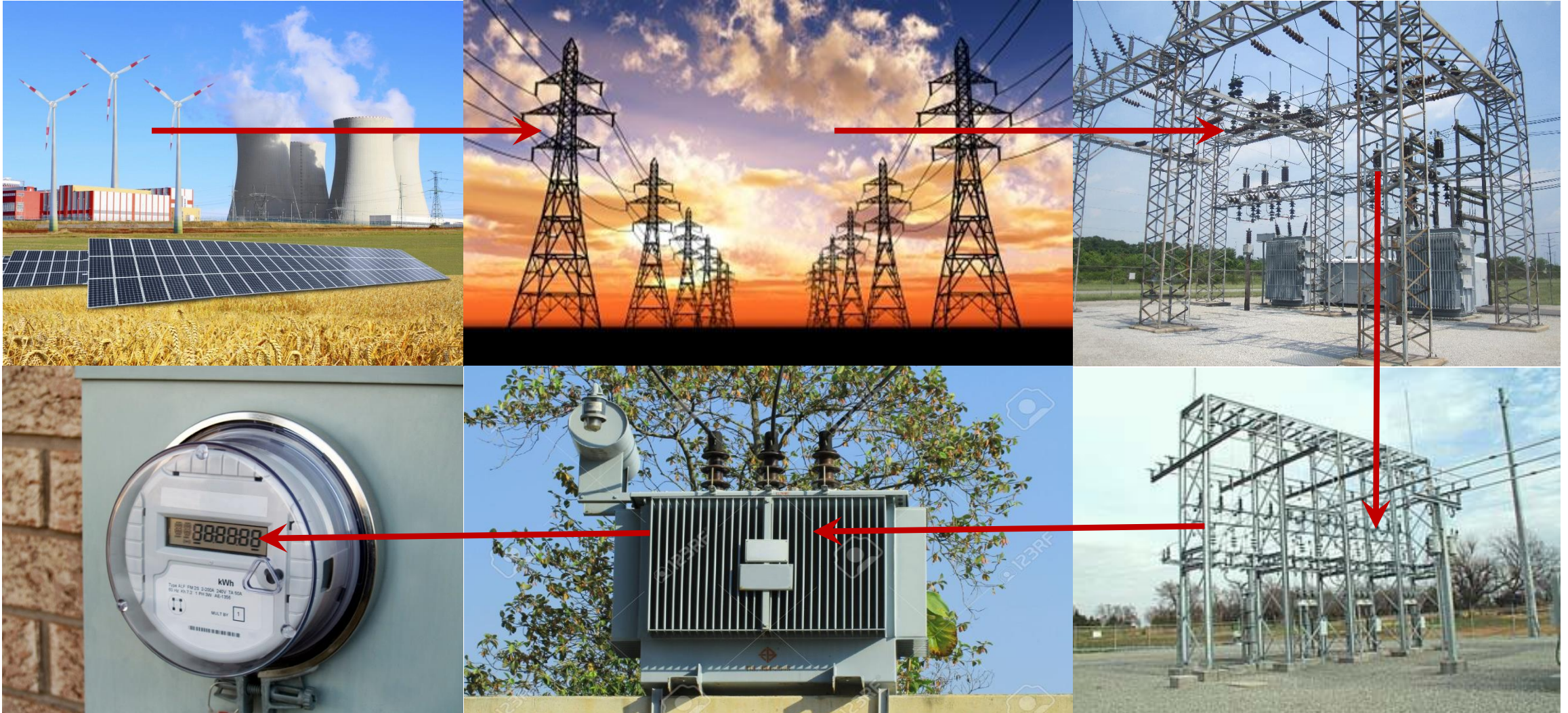


Solution for Data Security Challenges faced by Smart Grid Evolution

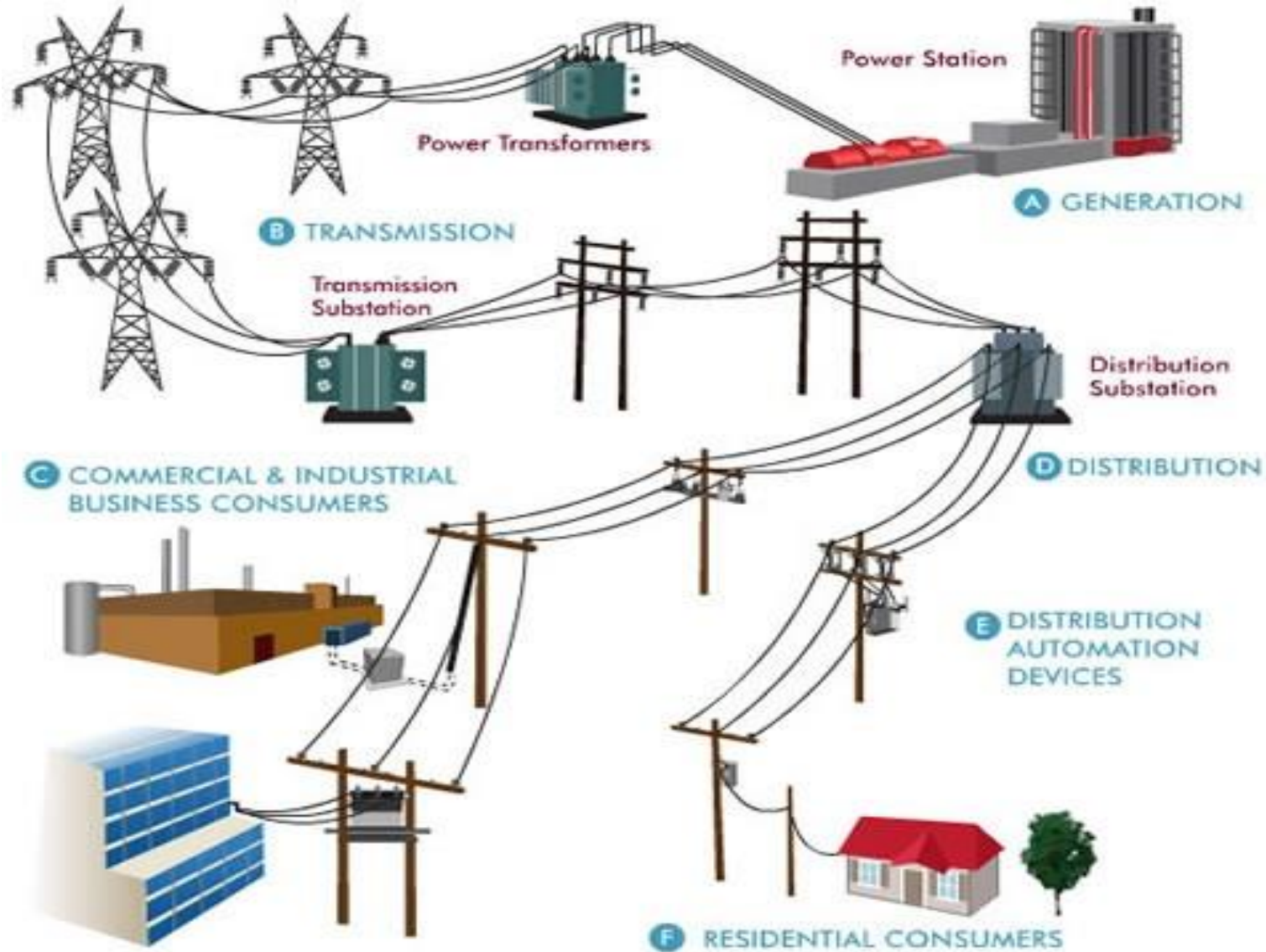
Venkat Subramanian – CTO
Dataguise Inc.

Electric Power – Generation to Distribution

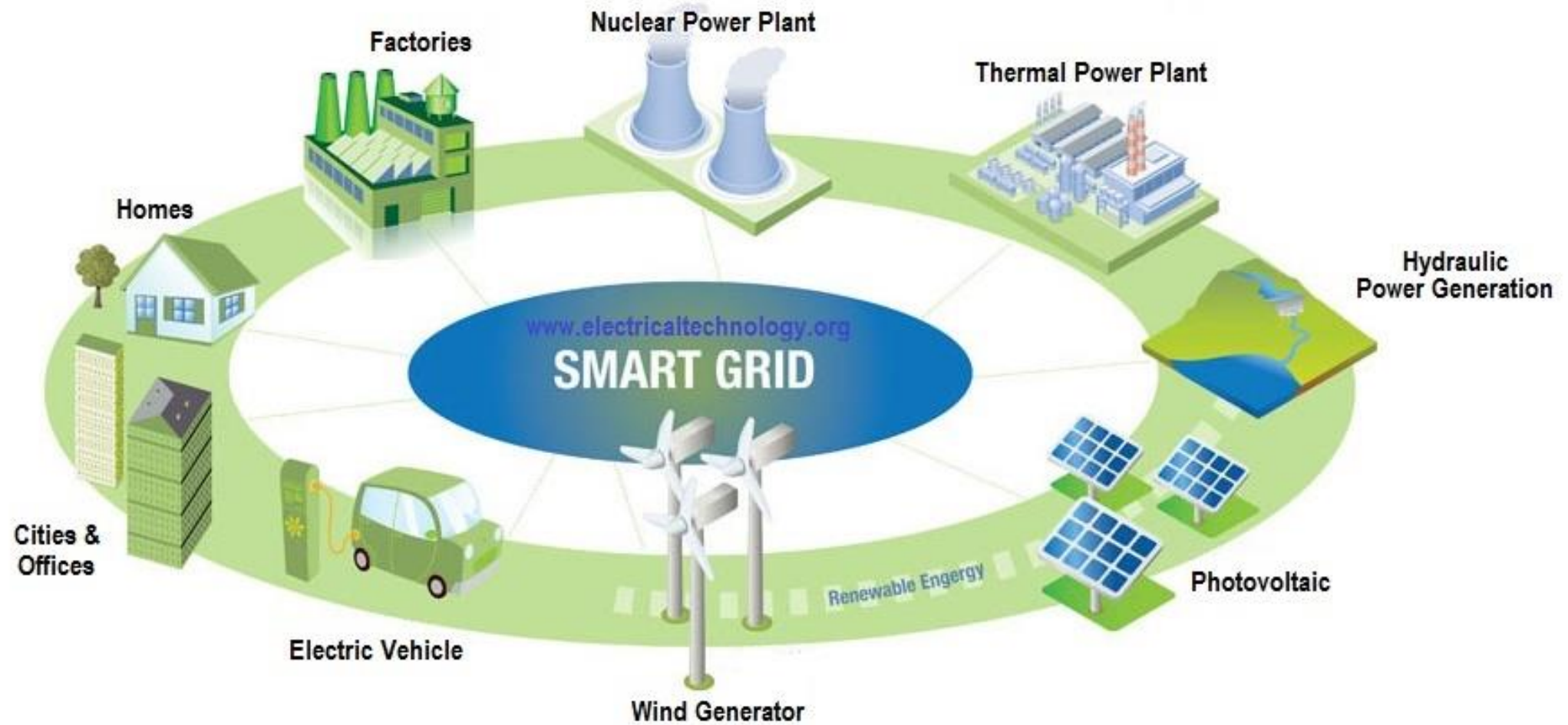
Generation, transmission lines, substations, feeder lines, transformers, local distribution, meters



Traditional Power Grid



The smart grid



Smart Grid & Energy Resources

Energy sources

- **Conventional Energy Resources**
 - Coal (33%)
 - Natural Gas (33%)
 - Nuclear (20%)
 - Hydro-electric (6%)
- **Distributed Energy Resources (DER)**
 - Small combustion turbines – natural gas (Peaker plants)
 - Solar
 - Wind
 - Geothermal
 - Biomass
 - Small Nuclear Reactors
 - Energy Storage

Smart Grid - Benefits

- **Reliable power**
 - Hour by hour demand prediction & procurement is near real- time, not based on prior day data etc.
 - Fault no longer leads to black out & energy supply disruption, factory downtime
 - Automatic securing of the system for continued operation
- **Lower carbon footprint**
 - hydropower, biomass and geothermal resources, sun, wind, nuclear etc
- **Lower cost to consumers**
 - greater access to info for more efficient use

Smart Grid & Data

- With sensors at every level
- With SCADA controlling the devices and acquiring huge amounts of data
- Data – a critical element in rapid response to heal disruptions
 - Volume
 - Variety
 - Velocity
 - Varying quality too
- Data Driven enterprise
- IT meets OT
 - Operational intelligence, analytics for predictions
 - Supervisory Controls and Data Acquisitions
 - Demand side management – consumer facing, self-service for efficient use

Smart Grid - Vulnerable

Energy Sector Leads in Cyber Attacks



The report highlights that energy companies have seen a **massive increase** in the number of **successful cyber-attacks** over the past year.

....with the emergence of **smart grids and smart devices**, make the energy sector a **highly attractive target** for cyber-attacks....



Data is the biggest Asset

It is also the biggest Vulnerability

Securing the Smart Grid

- Regulations for standard ways of handling data and controls
- Best practices for each entity
 - Normalize the data
 - Ensure fidelity of the data (with each player)
 - Strong authentication, authorization mechanisms
 - Encryption and Role-base Access
 - Workforce training & development (policy, process driven)
 - Consistency – different players cannot have different security postures

Strength of the system is limited by the weakest Link

Goal: Ensure integrity and availability

Regulatory Compliance

- Health Information Portability & Accountability Act (HIPAA)
- Personally Identifiable Information (PII)
- Payment Card Industry Data Security Standard (PCI)
- Sarbanes-Oxley (SOX)
- General Data Protection Regulations (GDPR)
- **NERC-CIP**
- ...
- ...

Secure Business Execution

The Vision

The ability of an Enterprise
to **safely** and **responsibly** leverage
the **value** of all of their **data assets**
for the purpose of
gaining new insights for better operations,
eliminating breach exposure, and
driving integrity of the entire system



DETECT



AUDIT



PROTECT

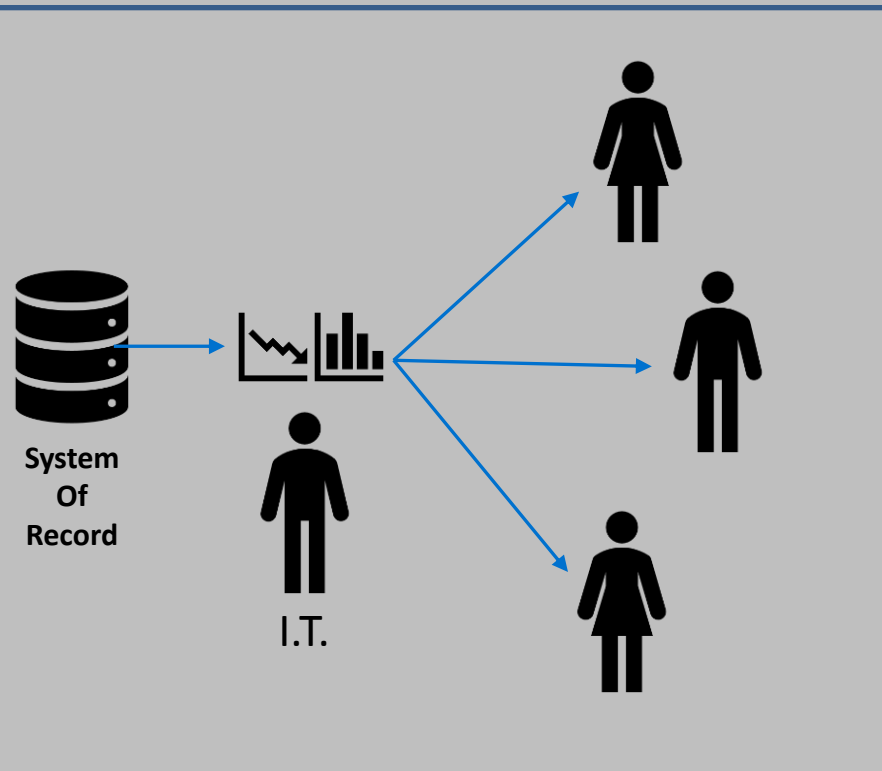


MONITOR

SECURE BUSINESS EXECUTION™

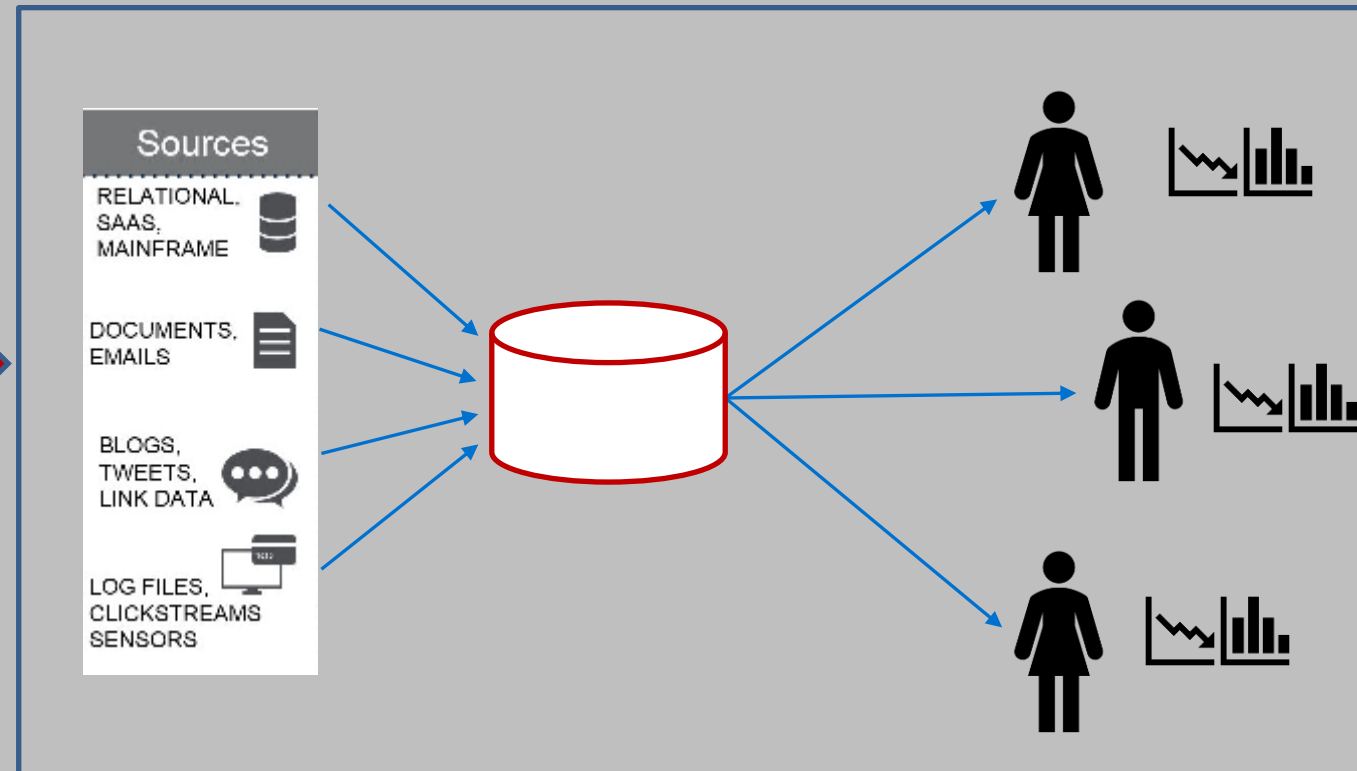
IT Transformations ...

IT led System of Record Reporting



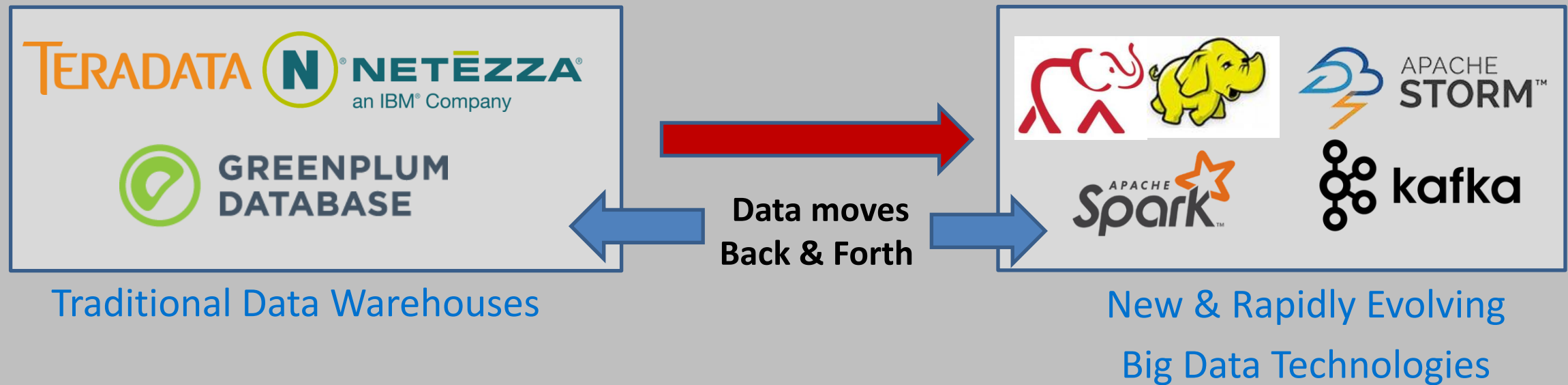
Limited Access
Glacial Speed of response

Business-units led Self service Reporting



Real-Time Access
Deeper Insights into Diverse Data

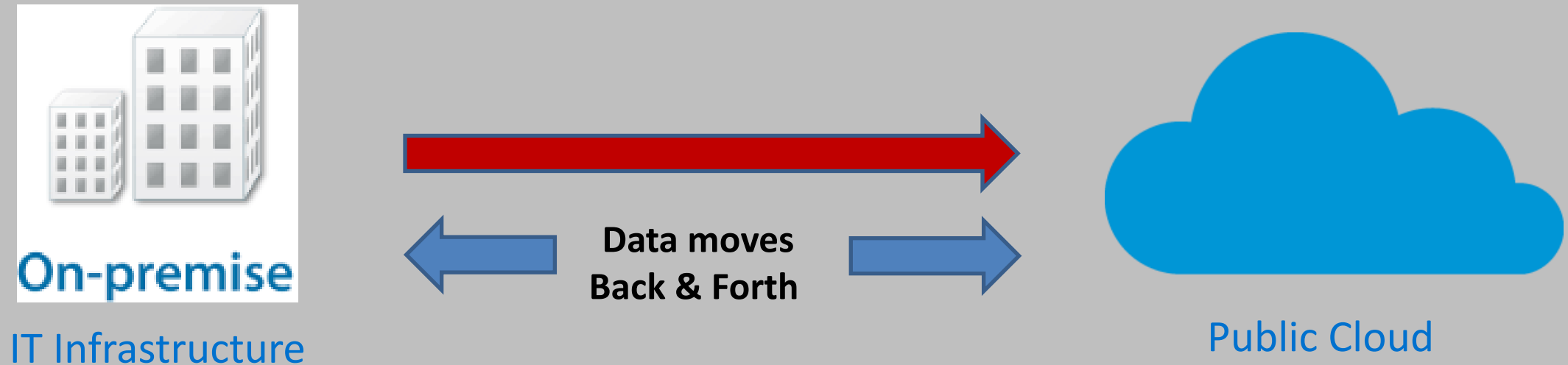
IT Transformations ...



Diversity in Data Sources, Flexibility in Access – Schema on Read

IT Transformations ...

Focus on Core Competency

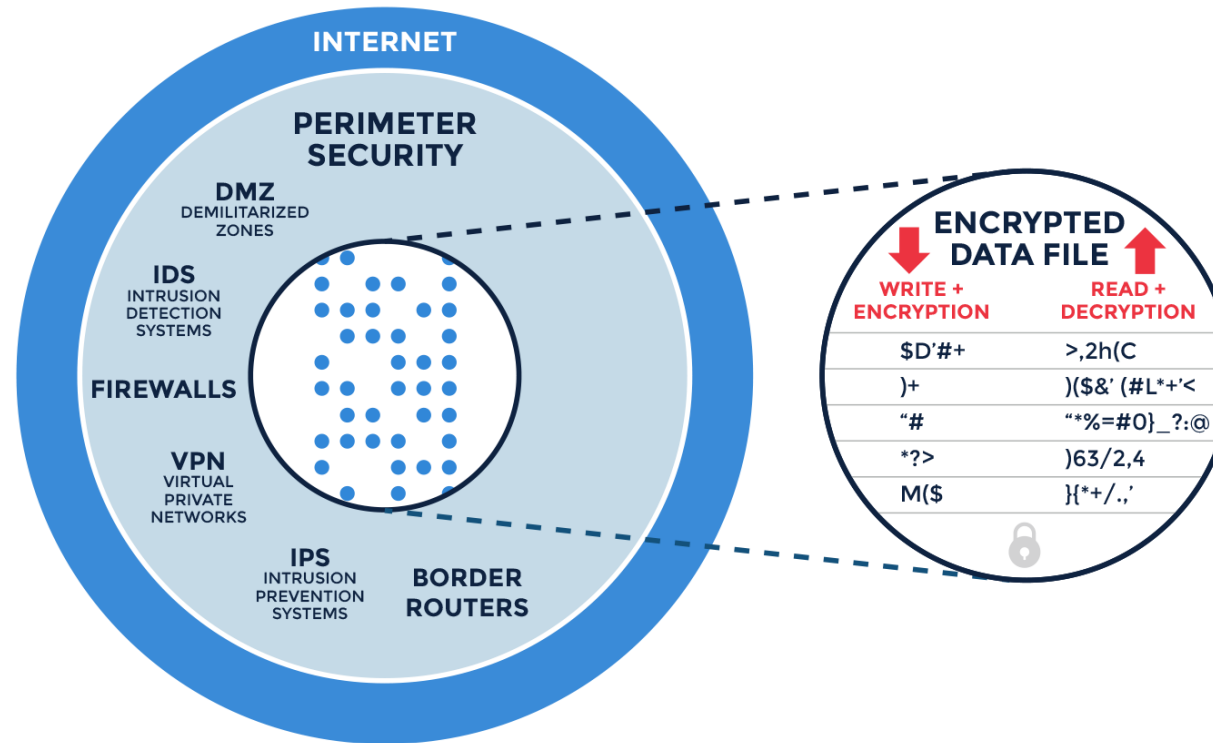


Agility in Capacity, Focus on core competence at a lower cost

Secure Environment

Perimeter Security

Volume/File Encryption – Control over data access & Regulatory compliance

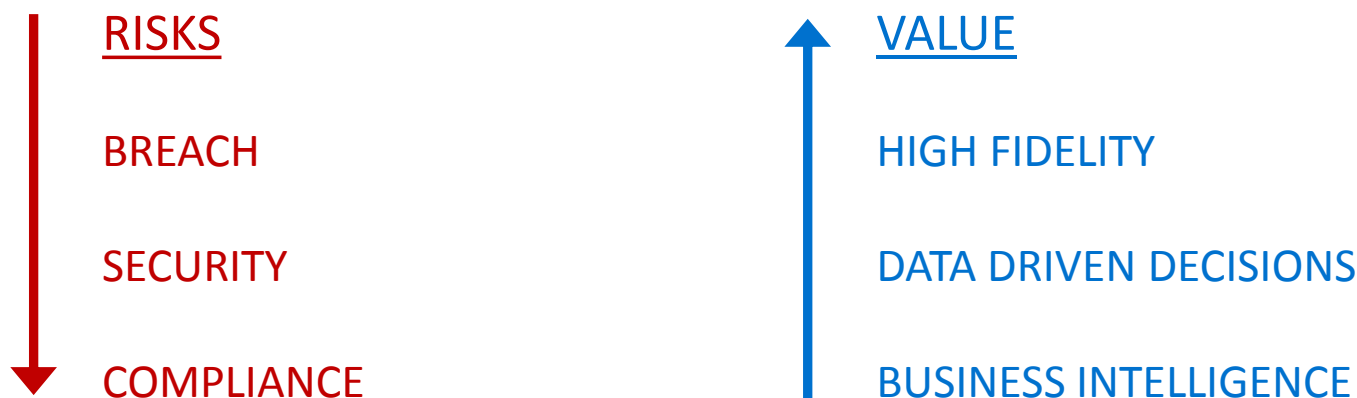


YOU NEED BOTH.....AND *MORE!

What Should We Do?

At the cell-level...

1. Precisely locate sensitive content across ALL repositories
2. Protect those assets appropriately – masking, encryption
3. Provide ‘controlled’ & ‘monitored’ access to data
4. Result: Enabled employees, trusted partners to make data-driven decisions



Even a Grocery Store Chain is a data-driven Company!!



Secure Business Execution Core Requirements

Secure Business Execution – Core Requirements



DETECT

Where sensitive content is present in struct, unstruct, semi-struct data



AUDIT

Who has access to which sensitive data & identify misalignments and risk factors



PROTECT

Sensitive data at the element level—encrypt/decrypt with RBAC, mask, redact



MONITOR

Based on metadata, track how and where sensitive data is being accessed through a 360° dashboard

Detection – Sensitive Elements



DETECT

SENSITIVE DATA DISCOVERY FOR UNSTRUCTURED DATA

Patterns in “Strings”

- Digit Patterns: 4451 3340 0023 1200 8/16 B7127157 Expires 04-19-15

Patterns in “Grammar”

- August Thomson –vs- 1240 August Ave –vs- 12 August 1994

Patterns in Context (Dependent)

- Other data elements in horizontal or vertical vicinity
'94538' near address elements

Patterns in Combination (Composite)

- CCN & Name, CCN, Name, Expiry not just CCN

Patterns in Knowledge

- Ontologies HL7 Encoding, Financial Market Data

Custom patterns (elements)

- Customer-specific elements & combinations with validation

Machine Learning

- Training data based on customer samples for greater accuracy

Data @Rest in HDFS, in-motion (Flume, FTP...)

DISCOVERY FOR STRUCTURED DATA – RDBMS....

Sample data on all tables, process column content

- Ensure enough non-null values AFAP
- Column name match
- Confidence factor based on matches & mismatches
- Some columns may be Unstructured

Track sensitive/privacy data schema changes

- User picks a discovery result as baseline per database
- Results from subsequent discoveries diff'd with the baseline to identify changes

Detection – Sensitive Elements



DETECT

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228 East Main Street Suite 300 Rochester, NY 14604
Attn: Payoff Dept

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Bus: (508) 850-0058
Fax: (508) 660-3098 (When plugged in)

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Relational Database Detection



PROTECT

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1	2407	NYSA	HIME	231304880	4870 ANDY LN	Fairfield	77393	2054.50	NULL	NULL	1
2	890	GRACE	SHIFFER	132424013	9387 NIKO EXPWY	Alabaster	48358	6027.71	NULL	NULL	1
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Secure Business Execution – Core Requirements



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Where sensitive content is present in struct, unstruct, semi-struct data



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Who has access to which sensitive data & identify misalignments and risk factors



PROTECT

Sensitive data at the element level—encrypt/decrypt with RBAC, mask, redact



MONITOR

Based on metadata, track how and where sensitive data is being accessed through a 360° dashboard



Entitlements Audit



- What dir/files, tables/columns contain sensitive elements
- Are the elements in clear text, encrypted, or masked
- Who has access to these files
 - Posix File system Permissions
 - “traditional unix permissions”
 - owner, group, other
 - rwx
 - Access Control Lists (ACL)
 - More fine grained
 - Policy based?

Secure Business Execution – Core Requirements



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Protection: Encryption, Masking



- MASKING
 - Obfuscation, one-way operation
 - Multiple options in DgSecure – fictitious but realistic values, X'ing out part of the content....
 - Consistent masking to retain statistical distribution of data
- ENCRYPTION
 - Encrypted cell/row
 - Accessible (Decryption) by authorized users only – Hive, bulk, via App
 - Granular protection
- REDACTION
 - X'ing out entire sensitive data cell
 - Nullify

Protection: Encryption, Masking



PROTECT

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Protection: Masking



PROTECT

Masking in Hadoop

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To : Charter-Four Auto Finance
95436 Beacher Blvd Suite 367 Harbine Mi 19641
Attn: Payoff Dept

From : Collice Doerr
13575 Osama Blvd # 561 Albion New York 15800
Home: (423) 922-8705
Bus: (618) 702-7558
Fax: (620) 436-4555 (When plugged in)

Date : Thursday, December 17th, 2015

Email : ADAMINA@OLIVE.EDU My secondary email is: BEVIS@CROLL.EDU
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Thank you,

Protection: Encryption



Encryption in Hadoop

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Relational Database Detection



PROTECT

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1	2407	NYSA	HIME	231304880	4870 ANDY LN	Fairfield	77393	2054.50	NULL	NULL	1
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Relational Database Masking



PROTECT

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9	4153	GELLA	ZUREK	466806468	1422 GIULIANA BLVD	Page Park	32373	120.83	NULL	NULL	1	
10	3483	OPHRAH	THERRES	769706261	2417 SEYMOUR EXPWY	Tecumseh	40139	2557.44	NULL	NULL	1	
11	3527	DANIELA	HORNACK	584386019	3772 BJORK HWY	Lake...	46422	1502.26	NULL	NULL	1	
12		rx_e_ident	rx_e_vPatFName	rx_e_vPatLName	rx_e_vCardHoldId	rx_e_vPat_Address	rx_e_vPat_City	rx_e_vPat_Zip	rx_e_nSbPatPayAmt	rx_e_cVerNbr	rx_e_vDPW	rx_e_vNCPDP
13	1	4507	RHIANNON	UYENO	296145701	5878 ELLERY EXPWY	Clarion	21444	1995.87	NULL	NULL	1
14	2	321	OLGA	RUTHS	649797568	3738 TERTIA AV	Hialeah Gardens	42511	7499.45	NULL	NULL	1
15	3	5724	HARUKO	ALIG	601947845	3902 KASIM EXPWY	Hendersonville	16773	7192.52	NULL	NULL	1
16	4	7989	WINOLA	MINZENMAYER	346345263	1026 VIDA LN	St. Michael	29554	4697.47	NULL	NULL	1
17	5	1564	SASHA	MEDAS	406805664	7848 JULIEN HWY	Beaver	14994	4541.60	NULL	NULL	1
18	6	5675	CHAHNA	ABUNDIS	203686599	1707 BRINLEY BLVD	Ionia	52825	1564.44	NULL	NULL	1
19	7	5700	MEDEA	LAFERTY	223762422	7303 CHLORIS RT	Mcclure	87840	6984.65	NULL	NULL	1
20	8	3132	EARLENE	SAGLIBENE	646721841	5578 BRAULIO AV	Woodfield	78219	9074.65	NULL	NULL	1
21	9	5948	LUPITA	KORAB	717181598	4631 DEMPSTER LN	Hamtramck	95715	5814.14	NULL	NULL	1
22	10	2180	CHAEI	BEISWENGER	231512899	4738 GAVRILA BLVD	Abbott	40881	9032.76	NULL	NULL	1
23	11	4731	CIERA	MCGAFFEY	309139558	1838 DUAA LN	Agoura Hills	23730	9942.47	NULL	NULL	1
24	12	5170	MALIKA	SWANGO	201312912	1056 ALDEN AV	Murphys Estates	86121	8393.56	NULL	NULL	1
25	13	6526	DELANEY	SCHLUMAKER	762405213	6598 BETHESDA BLVD	Temple Hills	22355	4686.24	NULL	NULL	1
26	14	8589	MAUREEN	PALEY	113236955	2002 JAZMYN HWY	Kahaluu-Keauhou	53533	741.37	NULL	NULL	1
27	15	9676	ZAZA	CIFALDI	331284197	3128 WYATT ST	Fort Lewis	22536	9171.87	NULL	NULL	1
28	16	9474	HANNAN	MOERMAN	297316731	1914 DEMPSEY HWY	Princeton	53010	7287.34	NULL	NULL	1
29	17	7873	NAN	OBAR	506367899	6037 AJAX ST	Austin	41751	7030.42	NULL	NULL	1
30	18	5935	MACEY	JANOSKO	661583237	3014 ALIZA BLVD	Beardstown	36924	4918.66	NULL	NULL	1

Encryption in Hadoop (Structured)

1001, ?96234:be5%#bf0104A3s=3J2sDrsvV460endEirKYEA==?, ?96234:be5%#bf0104A10=zG7sz80ebnf9Dt/10D9aXg==?, Director, World African Network, ?96234:be5%#bf0104A3w=Q1LTXTlgs04+s2eqmuj/Ilya8Cn9Q3gqcrx2PJR/Voc==?, ?96234:be5%#bf0104AuI=qU4fC29Ud5WXXG0kx0fLkKw==?, ?96234:be5%#bf0104Avc=RPfZLzguni5epnIGLeUWcw==?, ?96234:be5%#bf0104A4z=P59ugKYMW9YBbkEbrBWpmw==?, United States, ?96234:be5%#bf0104cw=i6LE9qwkT9ZrVYIfRGYSTA==?, ?96234:be5%#bf0104cw=0raC1LLtUuNW3UqozSExHg==?, 7/12/1968 3:15, ?96234:be5%#bf0104Xg==ssdT2bZ6Cx24B5N0RvcX1cveoKXtLq7IkQqd4xg1AA==?, ?96234:be5%#bf0104Qw==TkwlqyR5j4PhfSSXE+hfwQw==?, ?96234:be5%#bf0104JA==/WO26GFDHmVYHVAgaEtdfsVH+cFoMYX62mcxgkNSqZo=? , 1

1002, ?96234:be5%#bf0104A3E=oul0H31GXJ2WprddPFHTw==?, ?96234:be5%#bf0104A3E=d0A82Gws+JOBHAzXhuYM2g==?, Senior Financial Analyst, Vanguard Cellular, ?96234:be5%#bf0104A3w=4i+iHS20ihw8huh4v7DUXtkfy/lViDuLcgj5mk6/DHw==?, ?96234:be5%#bf0104Atg=OtBU/NotskVv2fXBweilow==?, ?96234:be5%#bf0104AuM=gF1NJS8SE6wvUIW+Yu++2g==?, ?96234:be5%#bf0104Ayo=Wm8ZTixdcVqQA8cmM4XXcw==?, United States, ?96234:be5%#bf0104kQ=xm69QXH11xfBI3M5enitkg==?, ?96234:be5%#bf0104uQ==xTE96JIKz6k87VXj7mL/Q==?, 3/9/1967 6:47, ?96234:be5%#bf0104YA==6rNU7P1xYDixw9P4tMkEVjNcFOD9Fu9LHDuxAzX1Z1Q=? , ?96234:be5%#bf0104QQ==Jq8eCUQWmCQeq/15jWo9iw==?, ?96234:be5%#bf0104JQ==4RFFj6yDKa4TH63oOnictYGvqu6YLzwCnh4JGP2peC8=? , 2

1003, ?96234:be5%#bf0104A1M=LqF4FG3z6FXvTGK76UjIIw==?, ?96234:be5%#bf0104A2c=7sxsrAsZjNTEetS2yqgmFw==?, Deputy General Counsel, Vanguard Cellular, ?96234:be5%#bf0104Auo=4i+iHS20ihw8huh4v7DUXtkfy/lViDuLcgj5mk6/DHw==?, ?96234:be5%#bf0104AuW=OtBU/NotskVv2fXBweilow==?, ?96234:be5%#bf0104AwE=gF1NJS8SE6wvUIW+Yu++2g==?, ?96234:be5%#bf0104A0g=Wm8ZTixdcVqQA8cmM4XXcw==?, United States, ?96234:be5%#bf0104fQ==QATwE+ci5Cn15H60k1nRyA==?, ?96234:be5%#bf0104uQ==AZU/dMmI23cypsrJpTB5Q==?, 9/2/1998 2:37, ?96234:be5%#bf0104YA==NCYTuhOETaJE/0zclx+RHHN8rV0f4rzy7zai3u+Gmw=? , ?96234:be5%#bf0104RQ==1xPsh0jCZQYzmS68qb2sAQ==?, ?96234:be5%#bf0104IA==RNyRLOQtZY7/QCw+zFoZWdr+y2FWMfmhnh2Qqws4Iiw=? , 3

1004, ?96234:be5%#bf0104A0k=AagMPDYjfAC/Pvd+BUGF2w==?, ?96234:be5%#bf0104A0k=gJ6Irwp0ZAn9BPFLvje3w==?, [NULL], Summit Telecomm, ?96234:be5%#bf0104Av4=gJiM30sRkf3oZoU+mXKh2rNuA8Feta56RpaCExh7A0=? , ?96234:be5%#bf0104AuW=2wyLCyhdmjyav3/seY7Rkg==?, ?96234:be5%#bf0104AsU=V54VttjD157CAn5+QwKaXA==?, ?96234:be5%#bf0104Ayo=6uhglChqZ0cJH578hRkaDg==?, United States, ?96234:be5%#bf0104fQ==vRG8rd2ZAqg33U6Qixa0Pw==?, ?96234:be5%#bf0104fQ==0raC1LLtUuNW3UqozSExHg==?, 6/8/1994 7:31, ?96234:be5%#bf0104YQ==0raC1LLtUuNW3UqozSExHg==?, ?96234:be5%#bf0104PA==YOTq01E2Z4lqZVswcDL0/g==?, ?96234:be5%#bf0104Ig==7Hm55jhC9Hr1wEzGDJZF3L0gBKBhL1kNBu/FmdmOck0=? , 4

Protection: Encrypted Data Access



Decryption: User WITHOUT access privileges on Names & SSN

```
hive> select CUSTID, DgDecrypter(Firstname), DgDecrypter(Lastname), DgDecrypter(Address), DgDecrypter(SSN) from CUSTOMERS where CUSTID between 1001 and 1005;
```

```
Total MapReduce jobs = 1
Launching Job 1 out of 1
Number of reduce tasks is set to 0 since there's no reduce operator
Starting Job = job_201312011624_0004, Tracking URL = http://localhost.localdomain:50030/jobdetails.jsp?jobid=job_201312011624_0004
Kill Command = /usr/lib/hadoop/bin/hadoop job -kill job_201312011624_0004
Hadoop job information for Stage-1: number of mappers: 1; number of reducers: 0
2013-12-01 17:10:37,381 Stage-1 map = 0%, reduce = 0%
2013-12-01 17:10:47,508 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 7.28 sec
2013-12-01 17:10:48,530 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 7.28 sec
2013-12-01 17:10:49,563 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 7.28 sec
2013-12-01 17:10:50,583 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 7.28 sec
2013-12-01 17:10:51,606 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 7.28 sec
2013-12-01 17:10:52,627 Stage-1 map = 100%, reduce = 100%, Cumulative CPU 7.28 sec
MapReduce Total cumulative CPU time: 7 seconds 280 msec
Ended Job = job_201312011624_0004
MapReduce Jobs Launched:
1 OK
```

```
1001 !260dg_32&:16540104Bw==3J2sDrsVV460ndeEirKYEA==! !260dg_32&:16540104Bw==zG7sz80ebnf9Dt/l0D9aXg==! !260dg_32&:16540104Bg==Tkwlqy
RSj4PhfSSXE+hfQw==!
1002 !260dg_32&:16540104Bw==Z310ireWiw6ykjrqM5xTLA==! !260dg_32&:16540104Bw==fJM+YcPZm47WxMFFgGu4lA==! !260dg_32&:16540104Bg==Jq8eCU
QWmCQeq/1SjWo9iw==!
1003 !260dg_32&:16540104Bw==LqF4fG3z6FXvTGK76UjIIw==! !260dg_32&:16540104Bw==7sxsrAsZjNTEetS2yqgMfw==! !260dg_32&:16540104Bg==1xPsh0
jCZQYzmS68qb2sAQ==!
1004 !260dg_32&:16540104Bw==AagMPDYjfAC/Pvd+BUGF2w==! !260dg_32&:16540104Bw==gJ6Irw0ZAn9BPFuLvje3w==! !260dg_32&:16540104Bg==Y0Tq01
2EZ4lqZVswcDL0/g==!
1005 !260dg_32&:16540104Bw==1XiJwH2SB3fEsQ7zW8TGqG==! !260dg_32&:16540104Bw==pGSF20Kmf0C4Hv1nZAVMFg==! !260dg_32&:16540104Bg==yXQKik
xHZkhmiKD0I3H48A==!
Time taken: 20.793 seconds
```


Protection: Encrypted Data Access



Decryption: User WITH access privileges on Names & SSN

```
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2013-12-01 17:10:52,627 Stage-1 map = 100%, reduce = 100%, Cumulative CPU 7.28 sec
MapReduce Total cumulative CPU time: 7 seconds 280 msec
Ended Job = job_201312011624_0004
MapReduce Jobs Launched:
Job 0: Map: 1 Cumulative CPU: 7.28 sec HDFS Read: 101813 HDFS Write: 265 SUCCESS
Total MapReduce CPU Time Spent: 7 seconds 280 msec
OK
```

```
1001 Andre Hayes 3495 Piedmont Road North East 275-80-3158
1002 Andrew Smith 2002 Pisgah Church Road 228-17-2121
1003 Anthony Dillon 2002 Pisgah Church Road 242-22-5396
1004 Arthur Nelson 3650 Claypond Road 216-33-6491
1005 Barbara Moore 4506 Lively Ln 219-46-9496
Time taken: 25.678 seconds
hive>
```


Protection: Encryption or Masking?



Analytic

Brand sentiment	Name
Log analysis	Address
Customer retention	Email Address
Clinical trial analysis	Customer lifetime value
Payments Risk Mgmt.	IP Address
Trading System Perf.	URL
Risk Modeling	Medical Record Number
Supply chain optimization	Social Security Number

Transactional

Smart metering	Telephone Number
Insurance Premiums	Date of Birth (DOB)
Process efficiency	IP Addresses
Person of Interest Discovery	Credit Card Number
Dynamic pricing	Credit limit
IT Security Intelligence	Purchase amount
Real-time upsell	VIN
Monitoring Sensors	Device ID

Protection: Encryption or Masking?



Analytic	Brand Sentiment	Name
	Log analysis	Address
	Customer retention	Email Address
	Clinical trial analysis	Customer lifetime value
	Payments Risk Mgmt.	IP Address
	Trading System Perf.	Medical Record Number
	Risk Modeling	URL
	Supply chain optimization	Social Security Number
Transactional	Smart Metering	Telephone Number
	Insurance Premiums	Date of Birth (DOB)
	Process efficiency	Medical test results
	Person of Interest Discovery	Credit Card Number
	Dynamic pricing	Credit limit
	IT Security Intelligence	Purchase Amount
	Real-time upsell	VIN
	Monitoring Sensors	Device ID

Mask

Encrypt

Protection: Encryption or Masking?



Analytic	Brand sentiment	Name
	Log analysis	Address
	Customer retention	Email Address
	Clinical trial analysis	Customer lifetime value
	Payments Risk Mgmt.	IP Address
	Trading System Perf.	URL
	Risk Modeling	Medical Record Number
	Supply chain optimization	Social Security Number
Transactional	Smart metering	Telephone Number
	Insurance Premiums	Date of Birth (DOB)
	Process efficiency	Medical test results
	Person of Interest Discovery	Credit Card Number
	Dynamic pricing	Credit limit
	IT Security Intelligence	Purchase amount
	Real-time upsell	VIN
	Monitoring Sensors	Device ID

Mask

Encrypt

Secure Business Execution – Core Requirements



DETECT

Where sensitive content is present in struct, unstruct, semi-struct data



AUDIT

Who has access to which sensitive data & identify misalignments and risk factors



PROTECT

Sensitive data at the element level—encrypt/decrypt with RBAC, mask, redact



MONITOR

Based on metadata, track how and where sensitive data is being accessed through a 360° dashboard

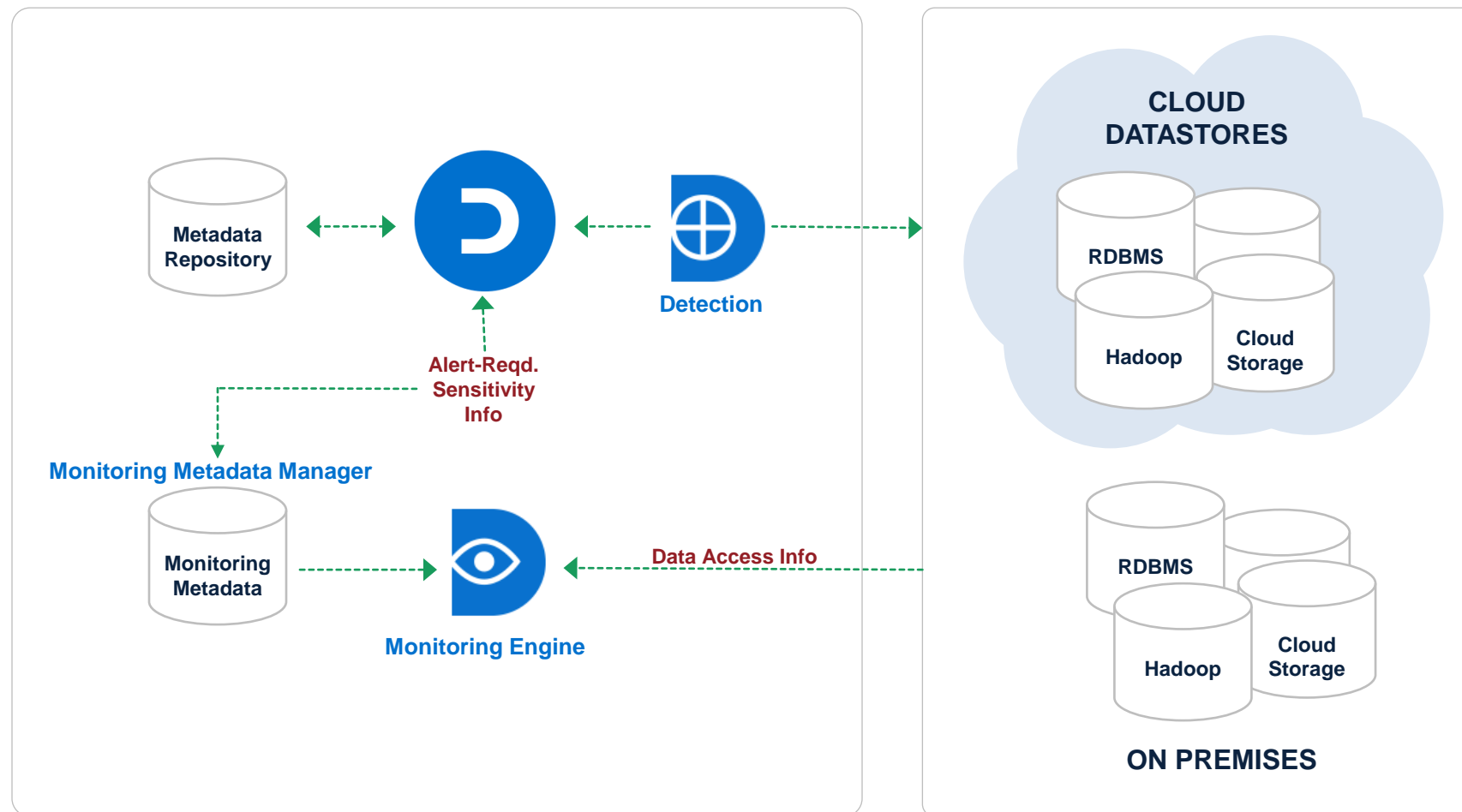


User Access Monitoring



- Precisely focused on monitoring sensitive data
 - Where are the sensitive content & how many (density)
 - What data are accessed
 - Who is accessing them
 - Raise alarm based on user-set policy
- Across all enterprise repositories
 - Hadoop, Oracle, Teradata, others (Roadmap)
 - Cloud Support (S3, Google Cloud Storage and Azure Blob)
- Continuous, near-real-time anomaly behavior detection (Future)
 - Using machine learning to build user profile
 - Complex Event Processing to detect breach
- “Out of the box” templates

User Access Monitoring



Secure Business Execution – Core Requirements



DETECT

Where sensitive content is present in struct, unstruct, semi-struct data



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Who has access to which sensitive data & identify misalignments and risk factors



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SECURE BUSINESS EXECUTION™

Dataguise DgSecure



DETECT

Where sensitive content is present in struct, unstruct, semi-struct data



AUDIT

Who has access to which sensitive data & identify misalignments and risk factors



PROTECT

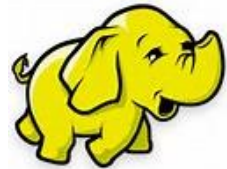
Sensitive data at the element level—encrypt/decrypt with RBAC, mask, redact



MONITOR

Based on metadata, track how and where sensitive data is being accessed through a 360° dashboard

Across Hadoop, RDBMS, Files, NoSQL DB



Dataguise DgSecure



DETECT

Where sensitive content is present in struct, unstruct, semi-struct data



AUDIT

Who has access to which sensitive data & identify misalignments and risk factors



PROTECT

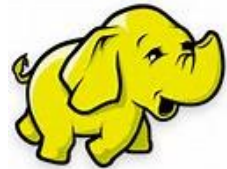
Sensitive data at the element level—encrypt/decrypt with RBAC, mask, redact



MONITOR

Based on metadata, track how and where sensitive data is being accessed through a 360° dashboard

Across Hadoop, RDBMS, Files, NoSQL DB



On Premises, in the Cloud, or Hybrid



On-premise





Q & A

A photograph of a wooden bridge with metal railings, leading through a dense forest. The bridge is made of wooden planks and has metal railings on both sides. The forest is lush with green trees and foliage. The bridge leads towards a large tree trunk in the distance.

Thank You

venkat@dataguise.com